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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/479,304	01/06/2000	GEOFFREY B. RHOADS	60085	2884
23735	7590	12/02/2005		
DIGIMARC CORPORATION 9405 SW GEMINI DRIVE BEAVERTON, OR 97008				
			EXAMINER PICH, PONNOREAY	
			ART UNIT 2135	PAPER NUMBER

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/479,304

Applicant(s)

RHOADS, GEOFFREY B.

Examiner

Ponnoreay Pich

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/2005</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant filed an amendment on 9/16/05. Claims 7-15 were newly added.

Newly added claims 11-15 are directed to distinct inventions from claims 1-10.

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to steganography usage in cell phones, classified in class 380, subclass 247.
- II. Claims 11-12, drawn to conveying information via in-band and out-of-band frequencies, classified in class 370, subclass 480.
- III. Claims 13-14, drawn to an encoding improvement, classified in class 713, subclass 156.
- IV. Claim 15, drawn to decoding steganographic data, classified in class 726, subclass 26.

The inventions are distinct, each from the other because of the following reasons:

Inventions I, II, III, and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as using steganography in cell phone to determine usage or for fraud detection. Invention II has separate utility such as transmitting artist or ownership information in a radio broadcast stream via out-of-band frequencies. Invention III has separate utility such as providing a central authority to provide an encoding key to encode data in a wireless network. Invention IV has separate utility such as using

steganography for controlling usage of copyright protected digital contents. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above, have acquired a separate status in the art as shown by their different classification, and the search required for one group is not required for the other groups, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. William Conwell on 11/23/2005 a provisional election was made with traverse to prosecute the invention of group I, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive. Applicant argues that an artisan would not look to Hembrooke's teachings to combine with Ariyavisitakul since Hembrooke is concerned with deterring the unauthorized recording and rebroadcasting of musical performances and that unauthorized recording and rebroadcasting of cell phone conversations is not a problem facing the industry. Thus, applicant argues that the rejection of claims 1-6 is tainted by hindsight. The examiner respectfully disagrees with applicant's reasoning. While Hembrooke's invention is useful for deterring unauthorized recording and rebroadcasting of musical performances, he also disclosed that his invention in a broader sense relates to the identification of sound and like signals (col 1, lines 10-12). The examiner respectfully

submits that fraudulent use of cell phones is a problem facing the cell phone industry as can be seen from the numerous documents listed in the applicant submitted IDS on 9/16/2005 and from the background section of applicant's specification. Being able to identify for certain that a cell phone broadcast did indeed come from a legitimate cell phone owned by a legitimate user would go a long way in preventing cell phone usage fraud. In fact, applicant admitted that at the time applicant's invention was made, one known method to deter fraud was to monitor a cell phone's RF signal to identify the originating phone (specification, p2, lines 13-14). Incorporating Hembrooke's teachings would allow for this method of fraud prevention already used in the art at the time applicant's invention was made. A cell phone owner would not be able to successfully dispute that it was their cell phone that a call originated from if only their cell phone could have been used to send a signal with a certain unique identifying mark. On the other hand, if the signal originating from a fraudulent cell phone is discovered to not match a legitimate user's identification signal, then the cell phone company would know immediately that someone is attempting to hack and use a legitimate user's account. In addition, should a fraudulent user be captured and a cell phone be found in their possession, it would provide useful evidence in the courts if it can be determined if it was the cell phone in their possession that originated the fraudulent calls or attempts. Thus, because Hembrooke teaching would allow for the identification of a signal's origin, one of ordinary skill would look to Hembrooke's teachings to combine with Ariyavisitakul since being able to identify a signal's origin would be useful in preventing cell phone fraud. The examiner further reiterates that both teachings belong to the

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broader class of signal processing, so are analogous in nature. Further, Hembrooke discloses that his teachings may be used for the identification of any kind of signal (col 1, lines 34-38), so his teachings would apply to even signals from cell phones.

The rejections for claims 1-6 have been repeated below for record. Note also new rejections for newly added claims 7-10.

### ***Claim Objections***

Claim 8 is objected to because of the following informalities: The examiner believes the comma in line 2 of claim 8 should be deleted. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being obvious over Ariyavisitakul et al (US 5,084,891), herein referred to as Ari, in view of Hembrooke (US 3,004,104).

#### **Claim 1:**

Ari discloses a cell phone (Fig 8 and col 14, lines 14-17) including a data capture system (col 25, lines 55-60 and Fig 8, item 360) and a radiant-energy digital data transmission system (Fig 8, item 399 and col 27, lines 30-46), characterized in that the cell phone further includes an encoder (Fig 8, item 870) that encodes data captured by the data capture system prior to its transmission by the data transmission system (col 27, lines 37-46).

Note that although Ari does not explicitly state that the cell phone disclosed by him uses digital data transmission, because Ari discloses that the cell phone uses TDMA, it must be capable of digital transmission. It would have been obvious to one of ordinary skill at the time the applicant's invention was made to have made the radiant-energy transmission system transmit digital data. One of ordinary skill would have been motivated to do so as digital data usually comes in clearer on a telephone system than analog signals.

Ari does not disclose the cell phone further includes a steganographic encoder that hides a plural-bit auxiliary code within the data captured by the data capture system. However, Hembrooke discloses that at the time the applicant's invention was made, it was known in the art of signal processing altering a signal slightly so that the change is imperceptible to a human listener, wherein the alteration of the signal is for the purpose of identify the origin of the signal (col 1, lines 10-13 and 29-59). This disclosure reads on the use of steganography with signals and an encoder must exist to encode the signal using steganography.

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified Ari's cell phone using Hembrooke's teachings according to the limitations recited in claim 1. One of ordinary skill would have been motivated to do so as Hembrooke's teachings allow for the identification of a signal's origin (col 2, lines 68-70). Note that both Ari and Hembrooke's teachings both belong to the field of signal processing.

**Claim 2:**

Ari and Hembrooke disclose all the limitations of claim 1. In addition, Ari discloses the data capture system captures audio and includes a microphone (col 25, lines 55-60; col 27, lines 33-37; and Fig 8, item 855).

**Claim 3:**

Ari and Hembrooke disclose all the limitations of claim 1. In addition, Ari discloses that the cell phone encodes substantially all of the data transmitted by the cell phone (col 27, lines 30-46). Ari does not explicitly disclose the encoding being done transparently to a user of the cell phone. However, as conversation on a cell phone happen in real time, the encoding must be done transparently to a user of a cell phone as the user does not notice a delay due to the encoding.

Ari also does not disclose encoding done by a **steganographic** encoder and substantially all of the data transmitted by the cell phone is **steganographically encoded**. However, Hembrooke discloses imperceptibly altering a signal for so that the origin of the signal could be identified (col 1, lines 10-30 and col 2, lines 8-15 and 68-70), which reads on steganographic encoding and the use of a steganographic encoder. Note also that Hembrooke discloses that the output from the encoding could be broadcast concurrently (col 2, lines 64-67). This reads on real time steganographic encoding, so the encoding would be transparent to a user. It would have been obvious to one of ordinary skill in the art to have further modified the combination cell phone of Ari and Hembrooke according to the limitations recited in claim 3. One of ordinary skill would have been motivated to do so for the same reasons given in claim 1.

**Claim 4:**



Ari discloses a method of operating a cell phone, comprising:

1. Receiving input information (col 27, lines 30-46).
2. Encoding the input information (col 27, lines 30-46 and Fig 8, item 870).
3. Transmitting the encoded information by wireless (col 27, lines 30-46 and Fig 8, items 890 and 898).

Ari does not explicitly disclose the transmission being done in a digital format. However, as discussed in claim 1, as Ari discloses the cell phone uses TDMA, it is capable of transmitting in a digital format. It would have been obvious to one of ordinary skill in the art to have said transmitting by wireless done for the same reason and motivation given in claim 1.

Ari also does not disclose:

1. **Steganographically** encoding the input information **to hide a plural-bit auxiliary code therein**.
2. Transmitting the **steganographically-encoded** information.

However, Hembrooke discloses that at the time the applicant's invention was made, it was known in the art of signal processing altering a signal slightly so that the change is imperceptible to a human listener, wherein the alteration of the signal is for the purpose of identify the origin of the signal (col 1, lines 10-13 and 29-59). This disclosure reads on steganographic encoding.

In light of Hembrooke's teachings it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified Ari's method according to the limitations recited in claim 4. One of ordinary skill would have been motivated to do for the same reasons given in claim 1.

**Claim 5:**

Ari and Hembrooke disclose all the limitations of claim 4. Further, Ari discloses:

1. Receiving the input information in a non-digital form (col 27, lines 30-46).
2. Expressing the received information in digital form (col 27, lines 30-46 and Fig 8, items 865 and 870).
3. Encoding the digital form of the input information (col 27, lines 30-46 and Fig 8, item 870).

**Claim 6:**

Ari and Hembrooke disclose all the limitations of claim 5. Ari further discloses the input information is audio information (col 27, lines 30-46).

**Claim 7:**

The limitation of wherein the steganographic encoder additively combines an overlay signal with the data captured by the data capture system is obvious to Ari and Hembrooke's combination invention as Hembrooke disclose that identification of signals is achieved by impressing upon the signals a characteristic code (col 1, lines 14-16). In the context of the combination invention, this reads on the limitation recited in claim 7 since impressing reads on additively combining signals.

**Claim 8:**

The limitation of wherein said overlay signal is dependent both on said plural-bit auxiliary code and on said data captured by the data capture system is obvious to Ari and Hembrooke's combination invention. Note that the plural-bit auxiliary code reads on the characteristic code disclosed by Hembrooke (col 1, lines 14-16). The examiner notes that it is common practice in the art to encode an entire signal rather than just a portion of the signal, so in the context of Ari and Hembrooke's combination invention, it would have been obvious to one of ordinary skill to impress the characteristic code upon the entire signal representing the data captured by the data capture system, which means that to create the overlay signal, one would have to take into consideration the length/size of the data captured. To get the characteristic code to be as long as the data captured, the characteristic code would have to be repeated, creating an overly signal. This means that the overlay signal's size is at least as long as the data captured, so is dependent on the data captured. One of ordinary skill would have been motivated to make the overlay signal as long as the data captured by repeating the plural-bit auxiliary code because it is standard to make the encoding signal as long as the signal to be encoded.

**Claim 9:**

Claim 9 is substantially similar to claim 7 except claim 9 refers to the data captured by the data capture system recited in claim 7 as "said input information". The same rejection applies, however.

**Claim 10:**

Claim 10 is substantially similar to claim 8 except claim 10 refers to the data captured by the data capture system recited in claim 8 as "said input information". The same rejection applies, however.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ponnoreay Pich whose telephone number is 571-272-7962. The examiner can normally be reached on 9:00am-4:30pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ponnoreay Pich  
Examiner  
Art Unit 2135



KIM VU

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